PATHOLOGY AND BACTERIOLOGY

UNDER THE CHARGE OF

OSKAR KLOTZ, M.D., C.M.,

DIRECTOR OF THE PATHOLOGICAL LABORATORIES, SAO PAULO, BRAZIL,

AND

DE WAYNE G. RICHEY, B.S., M.D.,

ASSISTANT PROFESSOR OF PATHOLOGY, UNIVERSITY OF PITTSBURGH, PITTSBURGH, PA.

Gonococcus Types I.—Henmanies (*Jour. Infect. Dis.*, 1921, xxviii, 133) performed absorption tests on 85 strains of gonococci. Forty-nine of these were isolated from cases of urethritis, vulvovaginitis and ophthalmia by growing on ascites agar under the conditions of partial tension. The remaining strains were obtained from other laboratories and included the "so-called Torrey strains." It was found that the 85 strains fell into six very distinct serological types, by far the largest number of strains belonging to either type I or II. The agglutinins of a serum produced in rabbits by one type could not be absorbed by any of the strains forming the other types no matter how highly the serum was diluted and how much of the growth was used. The Torrey strains from three laboratories established themselves as members of type I, while of the ten strains received from another laboratory only four fell into this type. The remaining six formed the C race of type II. Believing that it would lead to mere assumptions the author makes no attempt at all to explain the differences in types of the Torrey strains. In a second communication (*Jour. Infect. Dis.*, 1921, xxix, 11) the same author further studied, by similar methods, the thirty-six strains forming type II in the original investigation. It was noted that these thirty-six strains grouped themselves into four fairly distinct subtypes or races. By means of a genealogical table the author shows graphically the antigen complex of the four races of type II, along with their interrelationships and their probable path of evolution. "Judging from analogy the six distinct and separate gonococci types discussed in the previous paper may have sometimes been merely races of one or two types. In the course of evolution the common connecting bond was eliminated and the races became new species. As the process of variation is still going on, and will continue as long as their living conditions are secured, there is no limit to further differentiation. A single clear-cut type may, by molecular rearrangement, acquire new antigenic characteristics and split into several races. Finally, by elimination, these may be differentiated into species."

Studies on the Pneumonic Exudate.—Having previously demonstrated in cellular material from the pneumonic lung a proteolytic enzyme active in eroding the surface of Loeffler's blood serum at P_h 7.3 to 6.7, Lord and Nye (*Jour. Exper. Med.*, 1921, xxxiv, pp. 199, 201, 207 and 211), in a series of four articles, further investigated the physical and biological properties of enzyme. It was found that the

enzyme remains active after preservation in the ice-box mixed with chloroform and toluene for eighteen months as well as at incubator temperature before and after heating to 65° C. for one hour, although it is only slightly active at room temperature and inactive after heating at 75° C. for one hour. The activity persisted when the enzyme was mixed with concentrations of sodium chloride varying from normal to 32 times normal. No dialysis of the enyzme could be demonstrated. The bile in which type I pneumococci had been dissolved caused no erosion of the blood serum. The purulent sputum obtained during life and the exudate at autopsy from the later stages of lobar pneumonia commonly eroded the Loeffler blood serum, while the cellular material obtained from the pneumonic lung in an early stage of lobar pneumonia failed to erode the surface until washed with normal saline solution. Mixtures of washed pneumococcic cellular material and normal human serum failed to erode the blood serum when the amount of cellular material was less than one part of cells to approximately three parts of serum, whereas erosion did occur when the cellular material exceeded this amount in the ratio. The authors believe that these observations point to a local ferment-antiferment balance between the pneumonic exudate and the human serum *in vivo*. By washing blocks of pneumonic lung and testing the supernatant fluid with the homologous antipneumococcus serum it was found that in those cases of lobar pneumonia due to the fixed types of pneumococcus (I, II, III) a specific precipitin reaction was obtained. On the other hand specific agglutinins for the homologous pneumococcus were wanting or present only in small quantity in the pneumonic exudate. The authors conclude that the pneumonic lung contains a soluble substance inhibiting agglutination of the fixed types of pneumococci by the homologous antipneumococcus serum.

Mononuclear Phagocytes of the Lung.—PERMAR (*Jour. Med. Res.*, 1920–21, xlii, 147) gives a more detailed account of the development of the mononuclear phagocyte of the lung. The same experimental method was followed as in his first paper on these cells—that is the administration of carmine powder in salt solution intratracheally and along with this the use of a vital stain to mark the endothelial cells. Pyrrhol blue and isamine blue were the dyes used. He found that the proliferating cell first enlarged in all dimensions, without greatly altering its shape, and at this stage it had a great avidity for the dye, which at this stage appears in granules in the cytoplasm. The cell then becomes polypoid in outline and retains only a narrow attachment to the vascular lining. Then by ameboid motion the cell passes outward through this point of attachment and comes to lie outside the vessel wall, and by further migration eventually reaches the air spaces of the lung. Its passage through the alveolar lining is effected in the same way as its original exit from the capillary wall. The free cells found in the alveoli were nearly always considerably larger than those just developed and in process of migration toward the air sacs. Mitosis was very difficult to make out in the preparations studied, but there was every evidence that the process described and photographed by Mallory in his work on the skin lesions in measles is identical with what goes on in the capillaries of the lung in response to the presence of